of this investigation includes data from three cities, Birmingham, Detroit and Pittsburgh—cities in which the unemployment rate was high and the population examined mainly one whose standards of living had been definitely lowered by the economic depression.

Control groups consisted of intermingled families still obtaining adequate food, clothing and shelter, and of families which even prior to the economic depression might be considered as having lived below the comfortable economic standard. These two groups may be considered as having experienced no economic changes despite the depression. The significance of this is brought out in the conclusions reached by the investigators, viz., that "The highest illness rate is reported by a group which was in reasonably comfortable circumstances in 1929 but which had dropped to comparative poverty by 1932; their rate is 60 per cent higher than that of their more fortunate neighbors who were equal in economic status in 1929 but suffered no drop in income by 1932."

From these findings we may presume that whatever influence the economic depression will have on the gross mortality rate will be dependent on the size of the group which has experienced the greatest drop in the standard of living. Perhaps our present low mortality rate is the result of a successful effort on the part of our social relief agencies in keeping this group comparatively small during the period of economic readjustment. It remains for the future to determine whether such an optimistic conclusion is justified.

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ON ENZYME FORMATION

The recent work of Stephenson and Stickland[1,2] affords a nice example of what Sir F. G. Hopkins has called the "birth of an enzyme." When *B. coli* is grown in the presence of formate, an enzyme is produced which will accelerate the decomposition of this molecule. When these organisms are transferred to an N-free medium, preventing growth, the formate-oxidizing property is retained. However, if the enzymes are grown in the absence of formate, and then transferred to an N-free medium which contains formate, there is no such reaction. The organism must be in contact with formate *during growth*. These experiments exclude the possibility of selective survival, sometimes invoked to explain adjustment of culture to new types of media.

The phenomenon is not new. Dienert[3] showed in 1900 that if yeast, which does not ferment galactose, is inoculated into a glucose-galactose medium, it develops the capacity to ferment the latter in about twenty-four hours. Von Euler and Jansson[4] found that in this case, too, presence of galactose during the growth phase is essential.

H. Fink has studied an interesting case in point.[5] Top yeast is characterized by a four-band cytochrome spectrum, bottom yeast by a two-band. One variety can be transformed into the other by using a very small inoculum, and maintaining, under aerobic conditions, to get top yeast, or anaerobic conditions for a yield of bottom yeast.

In these instances the chemical character of the cell has been altered by the chemical environment, and new enzymes have been produced by the "stimulus" of new types of food molecules.

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CONE-NOSE BITES—THEIR EFFECTS

The bite of the western blood-sucking cone-nose *Triatoma protracta* (Uhler) has been reported by physicians, health officers, and others as causing serious systemic disturbances, as well as swellings, welts, red blotches, and eruptions on the bodies of persons bitten. The writer, working under the direction of Professor W. B. Herms, of the Division of Entomology and Parasitology of the University of California, has for some time been engaged in studies of the anatomical aspects of this insect. During the investigation certain observations have been made which are thought to be of special interest and importance to practicing physicians and those concerned with public health problems.

In the laboratory the insects were kept alive and reared through their nymphal stages to the adult by feeding them on mammalian blood obtained from experimental animals, such as rats, mice, and rabbits. The bugs sucked blood readily from these animals, apparently without causing them any pain or harm. No fatalities ever occurred and no spots, marks or blotches were noted at or around the point of entry of the mouthparts or setae. This observation led the writer to suspect that the effects of the bites are far less serious than generally believed. In order to obtain first-hand information on this point, he allowed himself to be bitten several times.

A bug was placed on the back of the hand and immediately it attacked the skin and began to suck blood. The pain accompanying the penetration of the skin was less than that caused by the prick of a fine needle and was hardly perceptible. Two hours later another bug of the same species was allowed to bite, this time on the palm of the hand. The bug experienced no difficulty in driving its stylets through the thick skin and it sucked blood until its body became bloated and pear-shaped, but no pain was felt. At intervals of thirty minutes three more bugs were allowed to feed successively on the same hand; each time with the same results.

After a period of two weeks the experiment was repeated: this time with a bug which had been

1 Stephenson, M., and Strickland, L. H.: Biochem. J., 25:205, 1931.

2 Stephenson, M., and Strickland, L. H.: Biochem. J., 26:712, 1932.

3 Dienert, F.: Ann. Inst. Pasteur, 14:137, 1900.

4 Von Euler, H., and Jansson, B.: Ztschr. f. Physiol. Chem., 226:169, 1927.

5 Fink, H.: Ztschr. f. Physiol. Chem., 210:197, 1932.